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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,467	11/08/2001	Fang-Hvi Chan	B-4373 619285-5	4294

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EXAMINER	
JORGENSEN, LELAND R	

ART UNIT	PAPER NUMBER
2675	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,467	CHAN ET AL.	
	Examiner	Art Unit	
	Leland R. Jorgensen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 4 – 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiroshi, USPN 5,995,186.

Claim 1

Hiroshi teaches a liquid crystal display device comprising a first substrate 27; a second substrate 26 facing the first substrate, and a space for housing liquid crystal molecules 78 being formed between the first substrate and the second substrate. Hiroshi, col. 2, line 64 – col. 3, line 20; and figures 2a – 2b. See also Hiroshi, col. 1, lines 29 – 49; and figures 1a – 1d. A plurality of liquid crystal molecules are formed in the space in a predetermined arrangement. Hiroshi, col. 3, lines 10 - 20; and figures 2a and 2c. A first electrode 48 with a first end is formed on the first substrate and a second electrode 49 with a second end is formed on the first substrate with a discharge gap being formed between the first end and the second end. Hiroshi, col. 3, lines 15 – 20. When an external voltage is applied between the first and the second electrodes, an electrical field is generated to change the arrangement of the liquid crystal molecules. Hiroshi, col. 3, lines 10 - 14; and figures 2b and 2d.

Claim 4

Hiroshi shows that the predetermined arrangement of the liquid crystal molecules is in a horizontal alignment, each liquid crystal molecule has a longitudinal axe, and the longitudinal axe is substantially parallel to the first substrate and perpendicular to a line formed by the first end and the second end. Hiroshi, col. 1, lines 9 – 20, 61 – 65; and figures 2a and 2c.

Claim 5

Hiroshi shows that the predetermined arrangement of the liquid crystal molecules is in a horizontal alignment, each liquid crystal molecules has a longitudinal axe, and the longitudinal axe is substantially parallel to the second substrate and perpendicular to a line formed between the first end and the second end. Hiroshi, col. 1, lines 9 – 20, 61 – 65; and figures 2a and 2c.

Claim 6

Hiroshi shows that a line is formed between the first end and the second end, and the first electrode is symmetrical to the second electrode by the line. Hiroshi, figures 2a – 2d.

3. Claims 1 – 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al., USPN 6,642,984 B1.

Claim 1

Yoshida teaches a liquid crystal display device comprising a first substrate [second substrate 14] and a second substrate facing the first substrate [first substrate 12] with a space for housing liquid crystal molecules [liquid crystal layer 16] being formed between the first substrate and the second substrate. Yoshida, col. 1, lines 18 – 35; col. 10, lines 56 – 62; and figures 5A and 5B. A plurality of liquid crystal molecules are formed in the space in a predetermined

arrangement. Yoshida, col. 1, lines 18 – 35; col. 10, lines 56 – 65; and figure 5B. A first electrode 23a with a first end is formed on the first substrate and a second electrode 23b with a second end, formed on the first substrate with a discharge gap being formed between the first end and the second end. Yoshida, col. 1, lines 18 – 35; col. 10, lines 57 – 60; and figures 5A and 5B. When an external voltage is applied between the first and the second electrodes, an electrical field is generated to change the arrangement of the liquid crystal molecules. Yoshida, col. 10, line 65 – col. 11, line 2; and figure 5B.

Claim 2

Yoshida teaches that the predetermined arrangement of the liquid crystal molecules is in a vertical alignment, each liquid crystal molecule has a longitudinal axe, and the longitudinal axe is substantially perpendicular to the first substrate. Yoshida, col. 1, lines 32 – 35; col. 10, lines 62 – 65; and figure 5.

Claim 3

Yoshida teaches that the predetermined arrangement of the liquid crystal molecules is in a vertical alignment, each liquid crystal molecule has a longitudinal axe, the longitudinal axe is substantially perpendicular to the second substrate. Yoshida, col. 1, lines 32 – 35; col. 10, lines 62 – 65; and figure 5.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Hiroshi or Yoshida et al. in view of Wiltshire, USPN 5,313,562.

Claim 7

Both Hiroshi and Yoshida teach that the electrode are parallel to each other. Hiroshi, figures 1c, 1d, 2c, 2d, and 5. Yoshida, col. 1, lines 36 – 39. Neither Hiroshi nor Yoshida specifically teach that the display cell comprises a plurality of electrode pairs with an end-to-end arrangement.

Wiltshire teaches a display cell [cell 1] with a plurality of electrode pairs [conductive strip electrodes 9,10 and 11, 12] with an end-to-end arrangement. Wiltshire, col. 2, lines 46 – 65; and figures 1 and 7.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the end-to-end arrangement of electrode pairs as taught by Wiltshire with the liquid crystal device as taught by either Hiroshi or Yoshida to control the distribution of electric potential between that is endlessly and continuously variable. Wiltshire invites such combination by teaching the following object of the invention.

> It is an object of the present invention to provide an improved electrically-controllable liquid crystal wave plate suitable, in particular, for use in a polarization controller.

Wiltshire, col. 1, lines 52 – 55. Wiltshire concludes,

> To summarize, in the liquid crystal wave plate device according to the invention the magnitude of the retardation and/or the direction of the optic axis are electrically controllable. The retardation is determined by the thickness of the liquid crystal layer and the voltage applied. The direction is controlled by the distribution of electric potential between a set of in-plane electrodes and is endlessly and continuously variable. The speed of the device is governed by the

> thickness of the cell and is comparable to that of any nematic liquid crystal device i.e. 5-50 msec. The device can be used, inter alia, for endless polarization control. It is simple and inexpensive to produce, and exhibits low loss and rapid response.

Wiltshire, col. 5, line 52 – col. 6, line 9.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Soref, USPN 4,116,544; Baur et al., USPN 5,576,867; Ohe et al., USPN 5,600,464; and Ota et al., USPN 5,786,876, each teach a pair of electrodes on one substrate in a liquid crystal display cell.

Hasegawa et al., USPN 5,638,203, teaches a liquid crystal electro-optical device having end-to-end electrodes.

Saito, JP 407281201 A, teaches a pair of electrodes having an end-to-end arrangement in liquid crystal display cell.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj

STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600